K. O. Bowman

RESEARCH ABSTRACT

Title of Project: **TREATMENT OF OVERDISPERSED, AGGREGATED DATA ON HUMAN CHROMOSOMAL ABERRATIONS**

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Institution: Oak Ridge National Laboratory

ABSTRACT:

Our investigations to date have revealed that the problem of overdispersion of binomial and Poisson data is intrinsic to the consideration of **experimental-design optimality involving chromosomal aberrations** alleged to be induced by chemical components in the ambient air. Moreover, the current literature on chromosomal aberrations indicates that the existence of this problem is recognized by geneticists working with large, aggregated data sets. Our research has shown that this problem is almost certainly susceptible to solution by new and powerful mathematical and statistical techniques. Current methods of analysis - meta-analysis, Poisson-regression, etc. - rely on untested, simplifying assumptions about the underlying distributional properties that may not portray the aggregated data accurately. We have developed new, more realistic characterizations (distribution types) that we propose to apply to large aggregations of data on human chromosomal aberrations. Whatever our findings, they will be **applicable to similar biological endpoints said to result from exposure to environmental tobacco smoke.**

Kimberly O Bowman 4/9/91

Signature, Principal Investigator Date

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